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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/934,632	08/21/2001	Bin Wu	M-11141 US	8654
7590 10/20/2004			EXAMINER	
MacPherson, Kwok, Chen & Heid LLP			FILE, ERIN M	
1762 Technology Drive			ART UNIT	
Suite 226			PAPER NUMBER	
San Jose, CA 95110			2634	

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/934,632

**Applicant(s)**

WU, BIN; ZHENG, DONG

**Examiner**

Erin M. File

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 8.21.2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 13-24 is/are rejected.
- 7) ☒ Claim(s) 5-12 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8.21.2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10.2001</u>   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

### ***Drawings***

1. The drawing is objected to because there is no indication of enforcer 707 in Figure 8 as disclosed on page 9 line 28.

Appropriate correction is required.

### ***Specification***

2. The disclosure is objected to because of the following informalities:

“The rotator may further include an enforcer providing an error signal indicating a deviation in amplitude the first and second periodic signals.” (p.2 lines 13, 14)

The addition of the word “of” or another appropriate article before “the first and...” would correct this problem.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 13, and 14 are rejected under U.S.C. 103(a) as being unpatentable over Buchwald et al. (5,409,773) in view of Becker et al. (5,612,975).

**Claim 1**, Buchwald et al. discloses a loop (202 in Fig 3) comprising:

- Phase Detector (312, 314), receiving two input signals and outputting a phase difference
- Phase Control Signal Rotator (304), receiving said phase difference
- Phase Interpolator (306), receiving rotated signals and reference signals and outputting a linear combination of these signals. The output of the Interpolator is an internal signal to the Phase Detector (fig 4).

Buchwald fails to teach the quadrature output of the rotator; however Becker et al. teaches a rotator with quadrature output (fig 14). The output of the rotator in this teaching is periodic and is a function of the output of the phase detector( column 14 lines 12-20) . It would be obvious to one of ordinary skill in the art at the time of the invention to incorporate Becker's teaching of using in phase and quadrature signals into Buchwald's loop apparatus it will increase the throughput of the output signal.

**Claim 2** inherits the same limitations of Claim 1; further Buchwald teaches a phase interpolator and rotator (fig 15, 15a, 15b, 16a, 16b, 16c) that can rotate signals in multiples of 45 degrees. This could be used to create both a first signal and quadrature

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signal to the output of the interpolator. Quadrature output will increase throughput of the interpolator, and has common uses in the art such as in PSK and QAM modulation. Therefore it would be obvious to one of ordinary skill in the art at the time of the invention to incorporate Buchwald's teaching on quadrature signal creation into the combined teachings of Becker and Buchwald.

**Claim 13** has the same limitations from Buchwald et al. in view of contains the same limitations of Claim 1.

**Claim 14** contains the same limitations of Claim 2.

5. Claim 3 is rejected under U.S.C. 103(a) as being unpatentable over Buchwald et al. (5,409,773) in view of Becker et al. (5,612,975) and McNicol et al. (5193224).

**Claim 3**, inherits the limitations of Claim 1; further McNicol discloses a Phase detector connected to a Low Pass Filter and then connected to a Rotator (fig 1). The low pass filters is generally used after the phase detector to integrate the phase error and would be obvious to one of ordinary skill in the art at the time of the invention to incorporate in Buchwald's apparatus.

5. Claim 4 is rejected under U.S.C. 103(a) as being unpatentable over Buchwald et al. (5,409,773) in view of Becker et al. (5,612,975) and Monzello (5,584,065).

**Claim 4**, inherits the limitations of Claim 1; further Monzello discloses the use of an Integrator in a Rotator (fig 3). The integrator is used in the rotator to increase the

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voltage of the control signals in the rotator to create aligned quadrature signals and would be obvious to one of ordinary skill in the art at the time of the invention to incorporate in Buchwald's apparatus.

***Claim Rejections - 35 USC § 112***

6. Claims 15-24 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claims 15-24** are method claims dependent on an apparatus claim. The claims do not properly define <sup>weather</sup> ~~with~~ the method or apparatus disclosed. The claim as a whole is neither a definition of method nor an apparatus, but instead a hybrid of the two. Therefore it is rendered to be vague and indefinite.

7. Claims 15-20 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin M. File whose telephone number is (703)272-6040.

The examiner can normally be reached on M-F 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (571)272-3056. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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